

properties of
the location in space
(charge-independent)

properties of
the specific object
(charge-dependent)

vectors

Electric Field:
 \vec{E}
(N/C or V/m)

$$\vec{F} = q \vec{E}$$

$$\vec{E} = \vec{F} / q$$

Electric Force:
 \vec{F}
(N)

$$\Delta V = -\int E dx$$

$$\Delta V \approx -E \Delta x$$

$$E = -dV / dx$$

$$E \approx -\Delta V / \Delta x$$

$$\Delta PE = -\int F dx$$

$$\Delta PE \approx -F \Delta x$$

$$F = -dPE / dx$$

$$F \approx -\Delta PE / \Delta x$$

scalars

Electric
Potential:
 V
(J/C or V)

$$PE = q V$$

$$V = PE / q$$

Electric
Potential Energy:
 PE
(J)